

**WHAT IS CLAIMED IS:**

1. A data transmission system for carrying out a serial data transmission based on IEEE 1394 standard, the system comprising:

an interface control semiconductor integrated circuit for controlling the serial data transmission, the interface control semiconductor integrated circuit including a plurality of protocol circuits and a plurality of switches associated with the respective protocol circuits, each of the switches performing a switching between supply and shut-off of a clock; and

determination means for obtaining 1394-control-information from the interface control semiconductor integrated circuit and making a determination whether to supply or shut off a clock with respect to each of the protocol circuits based on the 1394-control-information,

wherein each of the switches performs the switching based on the determination of the determination means.

15        2. The data transmission system of claim 1, wherein the interface control semiconductor integrated circuit includes:

a clock control register for holding control information on the switches; and  
a clock selector for controlling operation of the switches based on the control information, and

20        the determination means updates the control information held in the clock control register, based on the determination.

3. The data transmission system of claim 1, wherein the 1394-control-information is the number of nodes on an IEEE 1394 bus, and

25        the determination means makes the determination based on the number of nodes.

4. The data transmission system of claim 1, wherein the 1394-control-information  
is a packet transmitted on an IEEE 1394 bus, and  
the determination means analyzes the packet and makes the determination based on  
5 a result of the analysis.
5. The data transmission system of claim 1, wherein the determination means  
makes a determination to supply a clock to one of the protocol circuits engaged in the data  
transmission, after a first packet has been sent or received in a transaction in which the data  
10 transmission is requested to begin, at the earliest.
6. The data transmission system of claim 5, wherein the determination means  
makes the determination to supply a clock, after a last packet has been sent or received in  
the transaction.
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7. The data transmitting system of claim 1, wherein the determination means  
makes a determination to shut off a clock with respect to one of the protocol circuits  
engaged in the data transmission, before a last packet is sent or received in a transaction in  
which the data transmission is requested to end, at the latest.
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8. The data transmitting system of claim 7, wherein the determination means  
makes the determination to shut off a clock, before a first packet is sent or received in the  
transaction.
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9. An interface control semiconductor integrated circuit including a plurality of

protocol circuits engaged in a serial data transmission based on IEEE 1394 standard,

the interface control semiconductor integrated circuit comprising a plurality of switches associated with the respective protocol circuits, each of the switches performing a switching between supply and shut-off of a clock.

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10. The interface control semiconductor integrated circuit of claim 9, includes:  
a clock control register for holding control information on the switches; and  
a clock selector for controlling operation of the switches based on the control information.

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11. The interface control semiconductor integrated circuit of claim 9, including determination means for making a determination whether to supply or shut off a clock with respect to each of the protocol circuits based on 1394-control-information,  
wherein each of the switches performs the switching based on the determination of  
15 the determination means.

12. A protocol circuit controlling method for controlling protocol circuits in an interface control semiconductor integrated circuit for controlling a serial data transmission based on IEEE 1394 standard,

20 the method comprising:  
a determination step of making a determination whether to operate each of the protocol circuits or not, based on 1394-control-information obtained from the interface control semiconductor integrated circuit; and  
a control step of controlling a switching between operation and non-operation of  
25 each of the protocol circuits based on the determination in the determination step.

13. The method of claim 12, wherein the 1394-control-information is the number  
of nodes on an IEEE 1394 bus, and  
in the determination step, the determination is made based on the number of nodes.

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14. The method of claim 12, wherein the 1394-control-information is a packet  
transmitted on an IEEE 1394 bus, and  
in the determination step, the packet is analyzed so that the determination is made  
based on a result of the analysis.

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15. The method of claim 12, wherein in the determination step, a determination to  
operate each of the protocol circuits is made, after a first packet has been sent or received  
in a transaction in which the data transmission is requested to begin, at the earliest.

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16. The method of claim 15, wherein in the determination step, the determination  
to operate each of the protocol circuits is made, after a last packet has been sent or received  
in the transaction.

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17. The method of claim 12, wherein in the determination step, a determination not  
to operate each of the protocol circuits is made, before a last packet is sent or received in a  
transaction in which the data transmission is requested to end, at the latest.

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18. The method of claim 17, wherein in the determination step, the determination  
not to operate each of the protocol circuits is made, before a first packet is sent or received  
in the transaction.

19. A data transmission system for carrying out a serial data transmission, the system comprising:

an interface control semiconductor integrated circuit for controlling the serial data  
5 transmission, the interface control semiconductor integrated circuit including a plurality of protocol circuits and a plurality of switches associated with the respective protocol circuits, each of the switches performing a switching between supply and shut-off of a clock; and

10 determination means for obtaining control information from the interface control semiconductor integrated circuit and making a determination whether to supply or shut off of a clock with respect to each of the protocol circuits based on the control information, wherein each of the switches performs the switching based on the determination of the determination means.

20. A protocol circuit controlling method for controlling protocol circuits in an interface control semiconductor integrated circuit for controlling a serial data transmission,  
15 the method comprising:

a determination step of making a determination whether to operate each of the protocol circuits or not, based on control information obtained from the interface control semiconductor integrated circuit; and

20 a control step of controlling a switching between operation and non-operation of each of the protocol circuits based on the determination in the determination step.